OVERVIEW OF THE DEVELOPMENT OF THE CALFED STRATEGIC PLAN FOR ECOSYSTEM RESTORATION

IMPETUS FOR THE STRATEGIC PLAN: SCIENTIFIC REVIEW PANEL

In October 1997, CALFED convened a panel of eight independent scientists for a four-day workshop to review the 1997 version of the three-volume Ecosystem Restoration Program Plan (ERPP). To ensure an independent and objective review, the panel was composed of nationally recognized scientists with experience in many of environmental restoration programs around the country but were not involved in Bay-Delta system issues. The following scientists served on the panel:

- Panel Chair, Dr. Ken Cummins, South Florida Water Management District, presently with the Cooperative Fisheries Unit, Humboldt State University, Arcata, California
- Dr. Paul Angermeier, Virginia Tech, Blacksburg, Virginia
- Dr. Michael Barbour, University of California, Davis, California
- Dr. Chris D'Elia, Maryland Sea Grant College State University New York, Albany, New York
- Dr. Tom Dunne, University of California, Santa Barbara, California
- Dr. Jack McIntyre, fisheries consultant, Henderson, Nevada
- Dr. Dennis Murphy, University of Nevada, Reno, Nevada
- Dr. Joy Zedler, San Diego State University, San Diego, California (Currently at University of Wisconsin)

In reviewing the ERPP, the panel drew upon their broad expertise in terrestrial, wetland and aquatic ecology, fisheries, plant and conservation biology, and physical processes. They also drew upon their experience in the nation's largest ecosystem management efforts including Chesapeake Bay, South Florida/Everglades, Columbia River, and other programs. Due to the brief review period and the panelists' limited experience in the Bay-Delta system, the panel did not evaluate individual actions described in the ERPP documents, but instead focused their comments on the conceptual framework of the Ecosystem Restoration Program. (The panel's Key Points and Recommendations are included in the text box on the following page.) The panel offered many constructive comments and recommendations on improving the presentation of the program's approach, utilizing scientists in the development and review of the program, employing conceptual models as educational and analytical tools, and developing an adaptive management strategy.

A key criticism by the panel was that the 1997 version of the ERPP was a plan—a menu of options—without a clear strategy for implementation. The panel provided specific recommendations on preparing a concise strategic plan document. One purpose of the strategic plan would better describe the approach of the program. It should clarify whether the program strives for true "restoration"—reverting to an historic condition—or simply rehabilitation of the ecosystem. It should also simplify and clarify ERP goals and objectives on the basis of conceptual models. The strategic plan should also provide better definition to the adaptive management strategy, including the use of conceptual and quantitative models; the use of goals and objectives to organize the adaptive management process; the development of testable hypotheses for management actions; and the design of actions as experiments. Lastly, the plan should also describe how new scientific expertise would be engaged in the development and review of the program.

STRATEGIC PLAN CORE TEAM

Interested agricultural, urban and environmental stakeholders and CALFED staff collaborated to identify components of a strategic plan that would address the panel's key recommendations. Staff and stakeholders also recruited a team of distinguished independent scientists and environmental planners to prepare the

document. A six-member team, referred to as the Core Team, spent four months during the summer and fall of 1998 developing the independent report entitled: "Strategic Plan for the Ecosystem Restoration Program." The following environmental scientists and planners served on the Core Team:

- Dr. Michael Healey, University of British Columbia, Vancouver, British Columbia
- Dr. Wim Kimmerer, San Francisco State University, Romberg Tiburon Center, Tiburon, California
- Dr. Matt Kondolf, University of California, Berkeley, California
- Dr. Peter Moyle, University of California, Davis, California
- Mr. Roderick Meade, R.J. Meade Consulting, La Jolla, California
- Dr. Robert Twiss, University of California, Berkeley, California

The focus of the Core Team's effort was to describe the ecosystem-based, adaptive management approach that will be used to refine and implement the Ecosystem Restoration Program. In particular, the plan identifies a process for prioritizing the programmatic actions described in Volume II of the ERPP. The plan added clear restoration goals and quantifiable objectives, replacing the less-specific implementation objectives in the 1997 version of the ERPP. The Core Team also identified critical ecological issues that must be addressed early in implementation as well as restoration opportunities to address those critical issues.

INTERIM SCIENCE BOARD

In January 2000, CALFED convened the Interim Science Board (ISB), which is comprised of nationally recognized independent scientists, to help CALFED staff refine the ERP and ingrain adaptive management in the implementation of the ERP. This standing science body must be of an interim duration because the final CALFED structure of governance is still being developed. CALFED anticipates that the Interim Science Board will be engaged through the Record of Decision and certification of final environmental documentation, with the possibility of extension until the final governance structure is defined and in place. Many of the ISB members have served either on the 1997 Scientific Review Panel or the 1998 Strategic Plan Core Team. The following individuals serve as members of the ISB:

- Dr. Michael Healey, University of British Columbia, Vancouver, British Columbia
- Dr. Wim Kimmerer, San Francisco State University, Romberg Tiburon Center, Tiburon, California
- Dr. Matt Kondolf, University of California, Berkeley, California
- Dr. Peter Moyle, University of California, Davis, California
- Dr. Robert Twiss, University of California, Berkeley, California
- Dr. Tom Dunne, University of California, Santa Barbara, California
- Dr. Paul Angermeier, Virginia Tech, Blacksburg, Virginia
- Dr. Dennis Murphy, University of Nevada, Reno, Nevada
- Dr. Ken Cummins, Humboldt State University, Arcata, California
- Dr Robert Spies, Applied Marine Sciences, Livermore, California
- Dr. Duncan Patten, Montana State University, Bozeman, Montana
- Dr. Denise Reed, University of New Orleans, New Orleans, Louisiana

The broad goal of the ISB is to assist the CALFED Ecosystem Restoration Program (ERP) by providing scientific advice and guidance with a management orientation. More specifically, the ISB will assist the CALFED staff to:

1. Establish a solid scientific/technical foundation for the ERP;
2. Provide scientific review, advice, and guidance;
3. Help ingrain ecosystem-based adaptive management in the implementation of the ERP; and,
4. Engage the scientific and technical questions at the root of policy issues and priorities.

The ISB meets every 4-6 weeks, with a portion of every meeting being open to the public. Meeting summaries will also be developed for every ISB meeting and made available to the public. Consult the CALFED website (http://calfed.ca.gov/) for notices of ISB meetings and to access meeting summaries.

ECOSYSTEM RESTORATION PROGRAM FOCUS GROUP

The ERP Focus Group was convened by CALFED in October 1999 to assist CALFED in the period prior to the Record of Decision to identify, address, and resolve key policy issues associated with the ERP and its implementation. The most significant issues addressed by the group included:

1. **PROGRAM INTEGRATION:** Ensure that the Ecosystem Restoration Program, the Multi-species Conservation Strategy, the Environmental Water Account, and other CALFED, and CALFED related, programs and actions are well integrated and work together.

2. **PRIORITY SETTING:** Recommend a process to set priorities, select Stage I actions, evaluate results and refine the longer-term implementation strategy.

3. **STRATEGIC OBJECTIVES:** Refine strategic objectives and recommend a process to quantify targets.

The ERP Focus Group is a joint agency/stakeholder policy forum involving the following individuals and organizations:

- Margit Aramburu, Delta Protection Commission;
- Gary Bobker, The Bay Institute;
- Mike Bonner, U.S. Army corps of Engineers;
- Byron Buck, California Urban Water Agencies;
- Steve Johnson, The Nature Conservancy;
- Dan Keppen, Northern California Water Association;
- Laura King, San Luis Delta Mendota Water Authority;
- Patrick Leonard, U.S. Fish and Wildlife Service;
- Dave Nesmith, Save the Bay;
- Tim Ramirez, Resources Agency;
- Pete Rhoads, Metropolitan Water District of Southern California;
- Steve Shaffer, CA Department of Food and Agriculture;
- Lawrence Smith, U.S. Geological Survey;
- Gary Stern, National Marine Fisheries Service;
- Frank Wernette, CA Department of Fish and Game;
- Leo Winternitz, CA Department of Water Resources;
- Steve Yaeger,; CA Department of Water Resources
- Carolyn Yale, U.S. Environmental Protection Agency.

The ERP Focus Group recommended the following to assist CALFED agencies in developing the Record of Decision:

1. Collectively adopt a policy statement, which clearly commits to the concept of a single blueprint for ecosystem restoration.

2. Endorse and support the development and refinement of ecological conceptual models as the basis for understanding the ecosystem and making informed management and regulatory decisions.

3. Commit to using sound science and the development of a comprehensive Science Program, including independent scientific review , to serve as a common resource available to all agencies and interested parties

(including agencies and programs outside the formal CALFED agencies and programs).

4. Execute a formal agreement, which defines how parties will coordinate and interact in pursuit of a single blueprint for ecosystem restoration.

5. Adopt the goals of the CALFED Ecosystem Restoration Program (herein referring to the ERPP plus the MSCS), as the shared vision of the single blueprint. In carrying out existing programs, agencies will continue to pursue the goals of those programs but will strive to be consistent with and to advance the restoration goals established in the ERP.

6. Establish the geographic scope of the blueprint as follows: "Bay-Delta estuary and its watersheds, which includes the Delta, Suisun Bay and Marsh, San Pablo Bay and their local watersheds, the Sacramento River and San Joaquin River watersheds, and San Francisco Bay and its local watersheds; and, limited to salmonid species issues, the near-shore portions of the Pacific Ocean out to the Farallon Islands and north to the Oregon border".

7. Commit to using the goals of the ERP for environmental water management, including the Environmental Water Account (EWA) and the Environmental Water Program (EWP).

NEXT STEPS

CALFED will continued to refine the 1998 Strategic Plan developed by the Core Team. While the Core Team's Strategic Plan significantly advanced the description of the adaptive management process, considerable work is needed to institutionalize and fully employ the concepts into an implementation strategy. Staff are working with members of the Core Team and the broader scientific community to prepare white papers that summarize our knowledge of the system and expected benefits of actions. These papers will be presented in a series of scientific, technical workshops in order to articulate adaptive management strategies for Stage 1 of implementation. Staff will then work with local scientists, landowners, county and city planners and others in regional and local meetings to identify restoration actions consistent with the adaptive management strategies. A more detailed description of the Regional Planning process is included in Chapter 5.

Scientific Review Panel Key Points and Recommendations

Excerpt from: "Summary Report of the Facilitated Scientific Review of the CALFED Bay-Delta Program's Draft Ecosystem Restoration Program Plan (ERPP)," prepared by CONCUR, October 31, 1997

A) **In revising the ERPP, CALFED should clearly state whether the goal of the program is restoration or rehabilitation and name the document accurately.** The term ecosystem restoration, as commonly used by ecologists, involves reverting to the extent possible to historic conditions. Another option, and perhaps a more realistic one, is to rehabilitate the ecosystem. This could involve improving habitat for native and exotic species. The ecosystem enhancement activities that encourage exotic fish species constitute rehabilitation and not restoration. The decision to restore or rehabilitate need not be made on a system-wide level -- it could be made for individual watersheds or ecological zones. One example of this choice would be to restore diked wetlands to tidal marsh downstream (restoration) as opposed to creating many impoundments upstream (such as rice fields) for upstream waterfowl habitat (rehabilitation). This distinction between "rehabilitation" and "restoration" is one among several examples of the need for refining the use of phrases and terms in the ERPP, as indicated at other points in this summary report.

B) **Simplify and focus the presentation of the program and its goals on the basis of conceptual models.** The goals should be explicit, quantifiable, and attainable. The panel agrees with CALFED's tiering approach. The use of conceptual models will be essential to determine the allocation of effort to each tier. However, a coherent defense of the tiering decision, based on ecological and other policy arguments still needs to be articulated to explain the approach to stakeholders.

C) **From the outset, the Program should embed outside scientific expertise in the adaptive management process.** This requires continuous involvement of independent science in the formulation and implementation of the ERPP. Involvement should include: 1) reviewing the rationale, methods, results, and analyses; 2) developing and reviewing recommendations and funding proposals; and 3) pointing out new opportunities. Later portions of this report provide additional guidance on how to accomplish this involvement.

D) **In order to utilize science as a basis for the adaptive management system, there is a need for the development and use of models of physical and biotic ecosystem processes with links to key biotic components.** There are several kinds of models that may be useful in the ERPP. Some are large scale, qualitative, conceptual and concerned with expressing ecosystem operation. An example of such a model is found in the U.S. Forest Service's Northwest Forest Plan. A second type is a more focused model, which may or may not be quantitative, that addresses selected aspects of ecosystem operation. It should present hypotheses that can be tested through measurements and experiments. A third type of model is a quantitative simulation that can be useful for making predictions.

E) **The ERPP report wisely promises that the program will involve an adaptive management framework incorporating decisions that are based incrementally in scientific analysis, hypothesis testing, and monitoring. Therefore the monitoring component of the adaptive management framework should be developed from testable hypotheses.** Information from monitoring should guide management of resources in the following manner: 1) The program would propose a management action to improve the ecosystem; 2) Managers would formulate alternative hypotheses that describe the outcomes of the management action; 3) The action would be conducted as an experiment, and 4) Results would be monitored by gathering data to determine which alternatives are most plausible. The panel acknowledges that not all management actions can be structured as experiments, but recommends that this method be applied wherever practicable.

F) **The recommendations the panel has made above will require continual interaction of agency managers, agency scientists, and independent scientists. Part of this interaction should entail the creation of a standing science body, a scientific and technical advisory board, composed of agency scientists, stakeholder scientists, and scientists independent of the program.** The body would facilitate the introduction of science into long-term management. The panel notes that other efforts of this kind and scale have failed due to the lack of independent scientific review. Activities to be carried out by the science body would include generating and reviewing hypotheses, formulating monitoring schemes, and reviewing and interpreting data. Another function of this body could be to resolve technical conflicts over data, analyses, interpretations, and conclusions. Designing the terms of reference and modes of operation for such a body could involve another round of review and discussions between this panel and CALFED staff.